

Appendix A: Projection of Visibility Improvement

Improvement in visibility for the 16 Colorado Plateau Class I areas was modeled for two scenarios, the results of which are shown in Tables A-1 and A-2 in Section A of this SIP.

Control Strategies

Scenario 1 is designed to assess the effect of the Grand Canyon Visibility Transport Commission (GCVTC) recommended control strategies, comparing the 1996 modeled base case to the visibility improvement resulting from the implementation of the following GCVTC strategies: the sulfur dioxide Annex Milestones, the regional pollution prevention program, maintenance of existing base smoke management programs, and accounting for the 2018 base case emissions (known and adopted federal, tribal, state, and local control programs in the contiguous WRAP region). Visibility changes resulting from regional implementation of state pollution prevention programs were modeled by the Regional Modeling Center, as part of the other Section 309 control strategies. Visibility changes resulting from implementation of pollution prevention programs by individual states or tribes were not modeled. Emissions changes from state or tribal pollution prevention programs, and the resulting visibility changes are small, based on the regional pollution prevention emissions analysis, but are accounted for in the regional modeling.

Scenario 2 is designed to assess the effect of the implementation of enhanced smoke management programs, as reflected in the WRAP Fire Emissions Joint Forum's 2018 optimal smoke management inventory. Enhanced smoke management programs were recommended by GCVTC and are required in Section 309 of the Regional Haze Rule. This scenario uses the emissions inventories from Scenario 1, except the optimal smoke management inventory was substituted for fire emissions. Thus, the results for Scenario 2 are a comparison of visibility changes resulting from emission reductions between the 2018 baseline smoke management and 2018 optimal smoke management fire inventories.

Modeling results projecting visibility improvement in 2018

Visibility at the 16 Class I areas on the Colorado Plateau was estimated for the 2018 Scenario 1 and Scenario 2 control strategies. Tables A-1 and A-2 display the improvements in visibility from the 1997-2001 baseline period to 2018 under Scenario 1 and 2 conditions for the, respectively, worst 20% and best 20% visibility days.

On the average 20% worst visibility days, projected improvement from 1997-2001 to 2018 for Scenario 1 at the 16 Class I areas on the Colorado Plateau ranges from a maximum reduction of 3.89 deciviews at Sycamore Canyon National Park in Arizona to a maximum increase of 1.42 deciviews at San Pedro Parks Wilderness in New Mexico. On the worst 20% days, Scenario 1 shows improving visibility at half and degradation in visibility for the other half of the 16 Colorado Plateau Class I areas. On the average 20% best visibility days, projected change from 1997-2001 to 2018 Scenario 1 ranged from a maximum reduction of 2.11 deciviews at Zion National Park in Utah to a maximum increase of 1.51 deciviews at San Pedro Parks Wilderness Area in New Mexico. On the best 20% days, Scenario 1 improves visibility conditions at three-quarters of the Class I areas on the Colorado Plateau.

A comparison of the visibility estimates for 2018 Scenarios 1 and 2 at the 16 Class I areas on the Colorado Plateau for the worst 20% (Table A-1) and best 20% (Table A-2) days reveals that 2018 Scenario 2 always estimated improved visibility as compared to 2018 Scenario 1. That is, the optimal smoke management programs produces visibility improvements over the base smoke management programs across all 16 Class I areas for both the worst 20% and best 20% days.